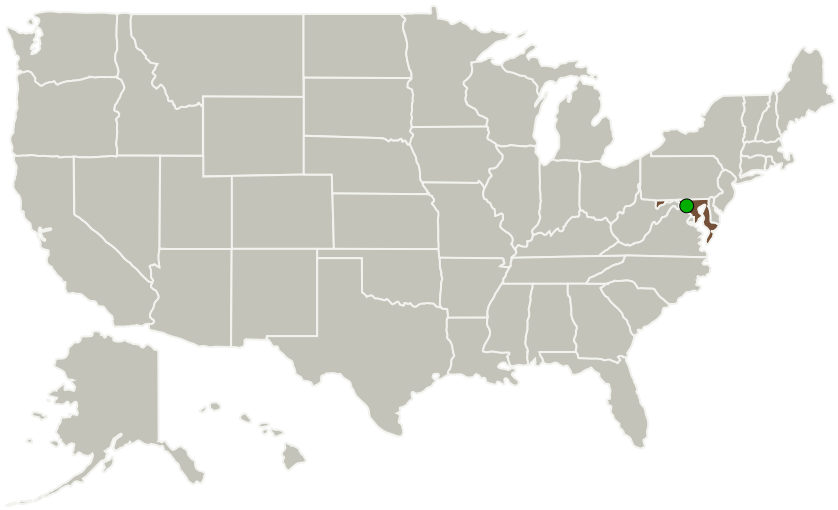
Non-Linear Non Stationary Analysis of Two-Dimensional Time-Series Applied to GRACE Data, Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

The proposed innovative two-dimensional (2D) adaptive analysis will be tested NASA's Gravity Recovery and Climate Experiment (GRACE) mission database in phase I in an attempt of extracting and reveal its finest details. The science data from the GRACE mission will be used to estimate global models for the mean and time variable Earth gravity field. Geodesy deals with obtaining precise measurements of the Earth, mapping points on the surface, and studying its gravitational field. The proposed R&D effort will contribute to the production of a more precise model of the changes in gravity over the Earth's surface vs. time. Early results using the prototype algorithms have demonstrated great potential of extracting physical cyclic components in GRACE data from level-1 data over the Amazon Basin & Groenland at a time interval of 10 days. The proposed research and development team has participated in the latest cycle of technology development related to the multi-dimensional isotropic, adaptive decomposition at the theoretical, implementation, and application levels. Not only will the creation of the proposed method contribute to the data analysis of GRACE data, but also in other applications within and outside NASA's mission, including the potential of extending to 3D, for the analysis of waveform LIDAR from the ICESat mission. Technology Taxonomy: portable data analysis tools, software development environments, and software tools for distributed analysis and simulation.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Starodub, Inc.	Lead Organization	Industry	Kensington, Maryland
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140055)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Starodub, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Nicolas Gagarin

Co-Investigator:

Nicolas Gagarin

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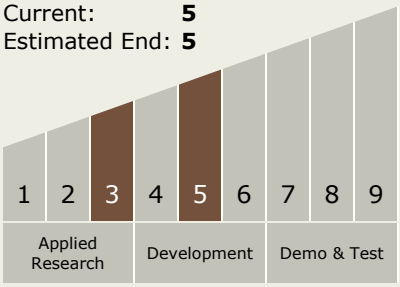
Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.4 Information Processing
    - TX11.4.4 Collaborative Science and Engineering

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System